Buckman Direct Diversion Project

A joint regional project of the City of Santa Fe and Santa Fe County to build a reliable and sustainable water supply.

Date: **October 11, 2012**

To: **Buckman Direct Diversion Board**

From: **Erika Schwender, CEP, Interim BDD Facilities Manager** ES

Re: **Update on BDD Operations since Mid August 2012**

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1. This memo is intended to update the BDD Board on BDD operations since early August 2012. After the shut-down in July and early August the BDD started daily diversions and production on August 9th. With the tapering off of monsoon season, water quality in the Rio Grande improved drastically, e.g. while we observed during July 133 hours during which Turbidity in the Rio Grande was greater than 600, we encountered only 27 hours in September during which Turbidity was greater than 600NTU. It is important to note, that the Turbidity of the Rio Grande is not the only decision making factor for whether or not to divert water from the river. For instance, many times the BDD does not divert due to flows from Los Alamos Canyon. Any time flows greater than 5cfs are observed at the Early Notification Station E109.9, the BDD stops all raw water diversions. Since flows of 5, 10, or 20 cfs would not impact the turbidity levels in the Rio Grande enough to increase Turbidity beyond 600NTU these events would not be included in the number of hours the BDD experienced high turbidity in the river.

   By the last week of August diversions and deliveries averaged in million gallon per day (mgd) as followed:

   a) Raw water diversions: 6.4 mgd
   b) Finshed Drinking water deliveries through Booster Station 4A: 2.7 mgd
   c) Finished Drinking water deliveries through Booster Station 5A: 2.3 mgd
   d) Raw water delivery to Las Campanas at BS2A: 1.1 mgd

   For the month of September the average diversion and delivery flows in mgd have been:

   a) Raw water diversions: 7.8 mgd
   b) Finshed Drinking water deliveries through Booster Station 4A: 5.1 mgd
   c) Finished Drinking water deliveries through Booster Station 5A: 1.9 mgd
   d) Raw water delivery to Las Campanas at BS2A: 0.5 mgd

2. The BDD is in the process of cleaning and performing maintenance to the pre-sedimentation and raw water basins. The total water storage capacity of the two pre-sedimentation basins (2.5mg each) and the raw water basin (3mg) is 8 million gallons. The Raw water basin was out of service from 09/08/12 to 09/22/12 and the pre-sedimentation basin was taken off-line on 09/23/12. Due to the reduced water storage capacity during the maintenance period it becomes necessary to divert water from the Rio Grande during on-peak hours.

3. Furthermore, a comparison of on-peak (8am through 8pm) vs. off-peak (8pm through 8am) diversions revealed a dramatic increase in energy expenses associated with the 7.9 hours necessary to deliver 1mg of raw water to Las Campanas. The table below depicts costs

associated with pumping 1 million gallons of raw water from the river at Raw Water Lift Station (RWLS) to Booster Station 1A (BS1A), Booster Station 2A (BS2A), LC at Booster Station 2A, and the Buckman Regional Water Treatment Plant (BRWTP) during on-peak vs. off peak hours.

Water pumped from	Cost on-peak hours (June through September)	Cost on-peak hours (September through May)	Cost off-peak hours (January through December)
RWLS to BS1A	$ 240	$ 155	$ 46
BS1A to BS2A	$ 582	$ 375	$ 112
LC at BS2A (RWLS to BS2A)	$ 822	$ 530	$ 158
BS2A to BRWTP	$ 552	$ 355	$ 107
RWLS to BRWTP	$1374	$ 885	$ 265

The following is a brief description of the process as well as time and pump requirements necessary to deliver 1mg to Las Campanas:

- To maximize performance, lifetime expectancy, and energy efficiency the BDD operates its pumps based on established pump curves
- The lowest pumping rate to pump water from BS2A to the BRWTP is 4.5 mgd
- Las Campanas' pump rate at BS2A is 3mgd
- In order to provide 1mgd to Las Campanas at BS2A the pump rate of the raw water pumps at the river has to be 7.5mgd
- With a pump rate of 3mgd it takes Las Campanas 7.9 hours to receive 1mg to BS2A
- During those same 7.9 hours the BRWTP received 1.5mg.
- Utilizing the table above we can establish the cost per million gallons pumped during on-peak and off-peak hours
    - 1mg to Las Campanas on-peak (June through August) $822
    - 1mg to Las Campanas on-peak (September through May) $530
    - 1mg to Las Campanas off-peak (January through December) $158
    - 1mg to BRWTP on-peak (June through August) $1374
    - 1mg to Las Campanas on-peak (September through May) $885
    - 1mg to Las Campanas off-peak (January through December) $265